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CENTRAL INTELLIGENCE AGENCY
WASHINGTON 25, D. C.

20 MAR 1962

MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : MILITARY NEWS: "Radiation Reconnaissance by Helicopters", by Captain G. Starikov

1. Enclosed is a verbatim translation of an article which appeared in the Soviet Ministry of Defense publication Collection of Articles of the Journal Military News (Voyennyy Vestnik). This publication is classified SECRET by the Soviets, and the issue in which this article appeared was distributed to officers from regimental commander upward.

2. In the interests of protecting our source, this material should be handled on a need-to-know basis within your office. Requests for extra copies of this report or for utilization of any part of this document in any other form should be addressed to the originating office.

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Richard Helms
Deputy Director (Plans)

Enclosure

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Original: The Director of Central Intelligence

cc: Military Representative of the President

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CSDB-3/649,387

COUNTRY : USSR

SUBJECT : MILITARY NEWS: "Radiation Reconnaissance by Helicopters", by Captain G. Starikov

DATE OF INFO: January 1961

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Following is a verbatim translation of an article entitled "Radiation Reconnaissance by Helicopters", by Captain G. Starikov. This article appeared in Issue No. 34, 1961 of the Soviet military publication Collection of Articles of the Journal Military News (Voyennyy Vestnik). This publication is classified SECRET by the Soviets and is published by the USSR Ministry of Defense.

According to the Preface, Issue No. 34 was sent for typesetting on 14 December 1960 and released to the printer on 25 January 1961. The Preface states that articles express the opinions of their authors and are published as a form of discussion. Distribution of Issue No. 34 was to officers from regimental commander upward.

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Radiation Reconnaissance by Helicopters

by

Captain G. Starikov

The speedy reception of data on the radiation situation is only possible as a result of well-organized reconnaissance by all means. It is scarcely possible to carry out this task by utilizing only chemical and radiation subunits. Therefore, it is necessary to use MI-1 and MI-4 helicopters for this purpose in every possible way.

A series of flights by reconnaissance scouts in MI-4 helicopters was carried out in the Northern Group of Forces in March 1960 for the purpose of finding the best methods of conducting radiation reconnaissance from the air.

Before the reconnaissance scout flights were carried out, courses were conducted at which the tactics of conducting radiation reconnaissance from the air, visual and topographical orientation, the methods of evaluating the radiation level, etc, were studied.

Experience shows that MI-4 helicopters may be used widely for the radiation reconnaissance of the paths of a radioactive cloud, large water obstacles, movement routes, and areas of troop disposition. We included in the crew of the helicopter a section commander and one or two chemists-dosimeter operators who were supplied with an R-105 radio set, a DP-1-V roentgenometer with attachment (pristavka), a DP-11-B radiometer, DS-50 dosimeters, a chemical reconnaissance instrument, protective equipment, set of indicators (ukazka), and a stopwatch.

Having received the task of conducting aerial radiation reconnaissance, the commander of the chemical and radiation reconnaissance subunit, together with the helicopter crew, studies the route of flight, determines the extent of the route, and determines the time required for the flight; they establish the speed and the altitude of the flight, landmarks, the method of communication of the patrol with the crew during the flight, and also coordinate times of takeoff and return to the airfield. Preparations for a flight usually take not less than one hour.

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After working out the problems of coordination, the section commander sets the task to the personnel, and then reports to the crew chief (komandir ekipazha) on the readiness for reconnaissance and places the personnel and the instruments in the helicopter cockpit according to the latter's instructions.

With the normal fueling of a helicopter, the R-105 radio set is placed in the left forward corner of the helicopter cockpit and is fixed to the side wall by straps. The radio set's antenna is led outside, but in order to increase the radius of action it is best to connect it to the helicopter's antenna. The section commander must have a map with a scale of 1:100,000 or 1:50,000 with the route marked on it.

If the sector contaminated with radioactive substances is located at a distance of 25 to 30 km from the airfield, the dosimetric instruments are switched on immediately on takeoff of the helicopter. The chemist-dosimeter operator takes the readings of the instruments, converts them to radiation levels on the terrain by means of a slide rule and enters the data obtained on a special form which shows the number of the landmark and the radiation level on the terrain. The section commander marks the points of the determined radiation levels on his map and transmits them by radio to the command post (KP) of his unit. After appropriate training the personnel convert the instrument readings very quickly to the corresponding values of radiation levels on the ground (0.7 to 0.8 m above ground level). Therefore, after the thorough training of the personnel, the patrol may consist of the section commander and one chemist-dosimeter operator.

When conducting aerial radiation reconnaissance great help in visual orientation is provided by the navigator who gives a signal with a siren on approaching every landmark. Radiation levels are measured, as a general rule, over the landmarks, which are marked at a distance of 1.5 to 3 km from each other. This distance is covered by the helicopter in one minute (at a speed of 120 km/h). If the personnel are well trained, it is also possible during that time to take instrument readings between the landmarks as well.

For communication with the patrol, an R-105 radio set is installed at the KP which has detailed it. The radio set is linked to the ten-meter telescopic antenna of the R-104 radio set. As a result, the range of radio communication is greatly increased.

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If, in case of great distance, radio communication is interrupted, the helicopter climbs to an altitude of 400 to 600m at established points in order to transmit the reconnaissance data. Then the helicopter continues to fly along the specified route at the specified height. The reconnaissance data on radiation levels at established points of the route may also be transmitted through the helicopter's radio set.

The chief of the chemical service or his assistant is located at the KP and receives data from one or several helicopters. He marks these data on a map, processes them and passes them on immediately to the commander of the unit (large unit). After the return of the patrols the aerial radiation reconnaissance data are amplified.

The radiation reconnaissance of the paths of a radioactive cloud and groups of clouds is assuming very important significance. One of its main tasks is the determination of the direction of the axis of the radioactive cloud path. The task can be resolved successfully if the place of the nuclear burst and the speed and direction of wind are known beforehand. On the basis of these data, the helicopter flight route is determined and the landmarks are prescribed. At the borders of the expected radioactive contamination sector the entry landmark is prescribed and the control landmarks are assigned after each 1.5 to 2 km along the route of flight; an exit landmark is prescribed at the exit from the contamination zone.

With a view to economy of time, it is advisable to conduct radiation reconnaissance of the routes of movement or of the areas of troop concentration along the directions intersecting the radioactive cloud trail at 90° turns (Sketch 1). In order to determine the nature of radioactive contamination more accurately, one may fly the helicopter along the cross sections of the path. When approaching the entry landmark, the navigator gives a signal with a siren. Such signals are given when passing each control landmark, i.e., after every 1.5 to 2 km.

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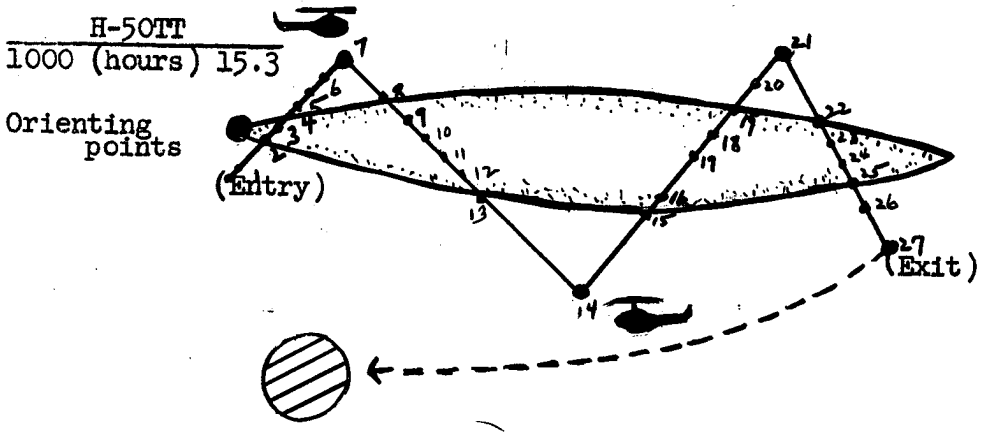

Sketch 1

Reconnaissance of a Radioactive Cloud Trail by one Helicopter

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Sometimes radiation levels will vary greatly along the movement route of the helicopter. Then, one can fix only the beginning of the contamination (0.5 roentgen/hour), the maximum radiation level, and the end of contamination. It is most important in this case to establish and mark accurately on the map the maximum radiation level each time the path of the radioactive cloud is crossed, so as to determine the direction of the path.

For the reconnaissance of the path of a radioactive cloud of a surface atomic burst with a yield of fifty thousand tons (the ground zero of the burst was at a distance of 80 km from the airfield) we first used an MI-4 helicopter. The total extent of the route along a broken line amounted to 530 km.

When preparing the helicopter, an additional fuel tank of 300 liters was placed in its cockpit. With such a fuel supply, the flight range of the helicopter is increased up to 300 to 320 km one way. The total time taken to fly to the entry landmark, the flight along the route, and the return to the airfield amounted to about four hours.

When using two MI-4 helicopters (Sketch 2), the route was divided into two parts. The helicopters left simultaneously and spent about two hours on the radiation reconnaissance. Moreover, complete information on the radiation situation was already received one and a half hours after the helicopter started. Thus, for a more rapid execution of the task of radiation reconnaissance in the radioactive cloud path zone, two MI-4 helicopters should be used.

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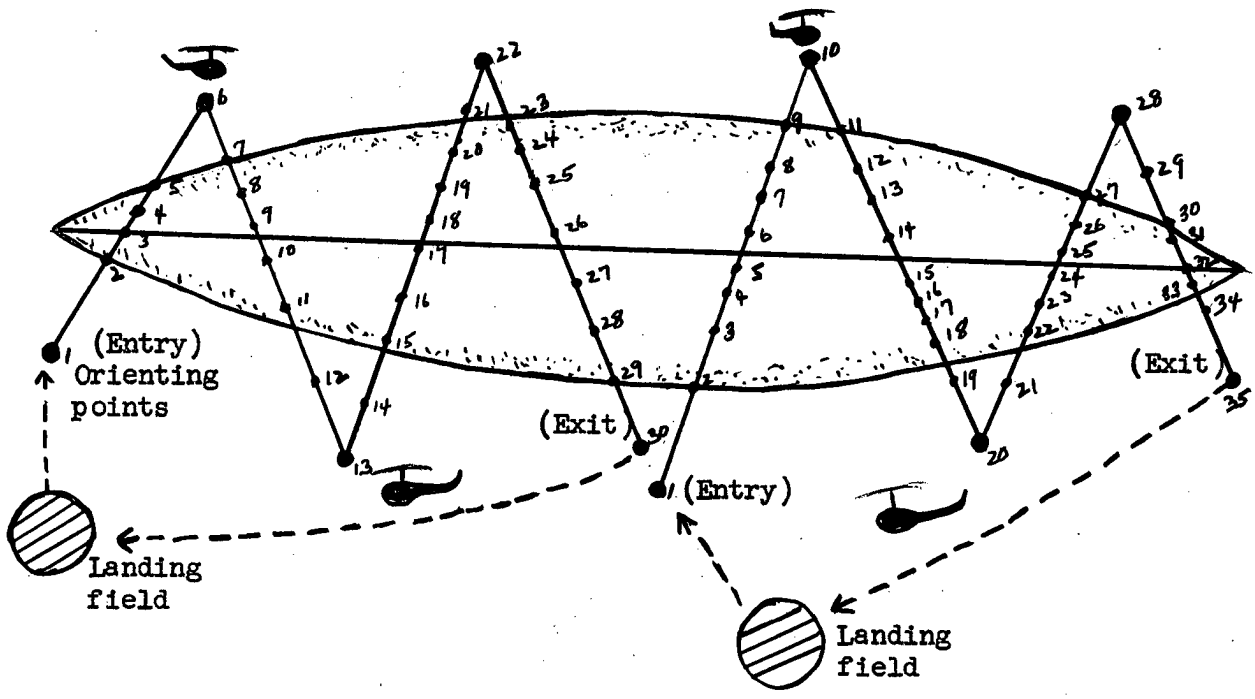

Sketch 2

Reconnaissance of a Radioactive Cloud Trail by Two Helicopters

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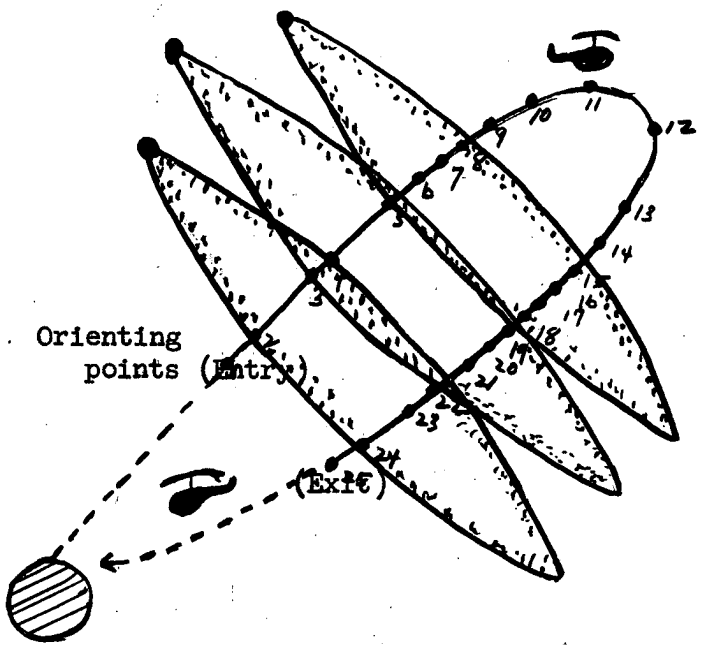
During the flight of the helicopters, especially in the first hours following a surface atomic burst, careful watch should be kept so that the helicopter does not find itself under the radioactive cloud.

In case of several surface atomic bursts, it is not possible to determine the configuration of the contaminated zone or the radiation levels by the calculation method. Therefore, a preliminary evaluation of contamination is first of all carried out by a MI-4 helicopter and those zones where troops are likely to be in operation soon are earmarked for reconnaissance. The assignment of landmarks, the procedure for conducting reconnaissance, and the transmission of data by radio remain the same as in the case of conducting radiation reconnaissance of the path of a single surface burst. (Sketch 3)



Sketch 3

Reconnaissance of a Radioactive Contamination Zone of Several Surface Nuclear Bursts

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One should, nevertheless, take into account that in actual conditions the radiation reconnaissance of the whole path of surface nuclear bursts will not always be carried out. In the main, the command will be interested in the radiation situation on the routes of troop movements, at broad water obstacles, and in areas of troop concentration.

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